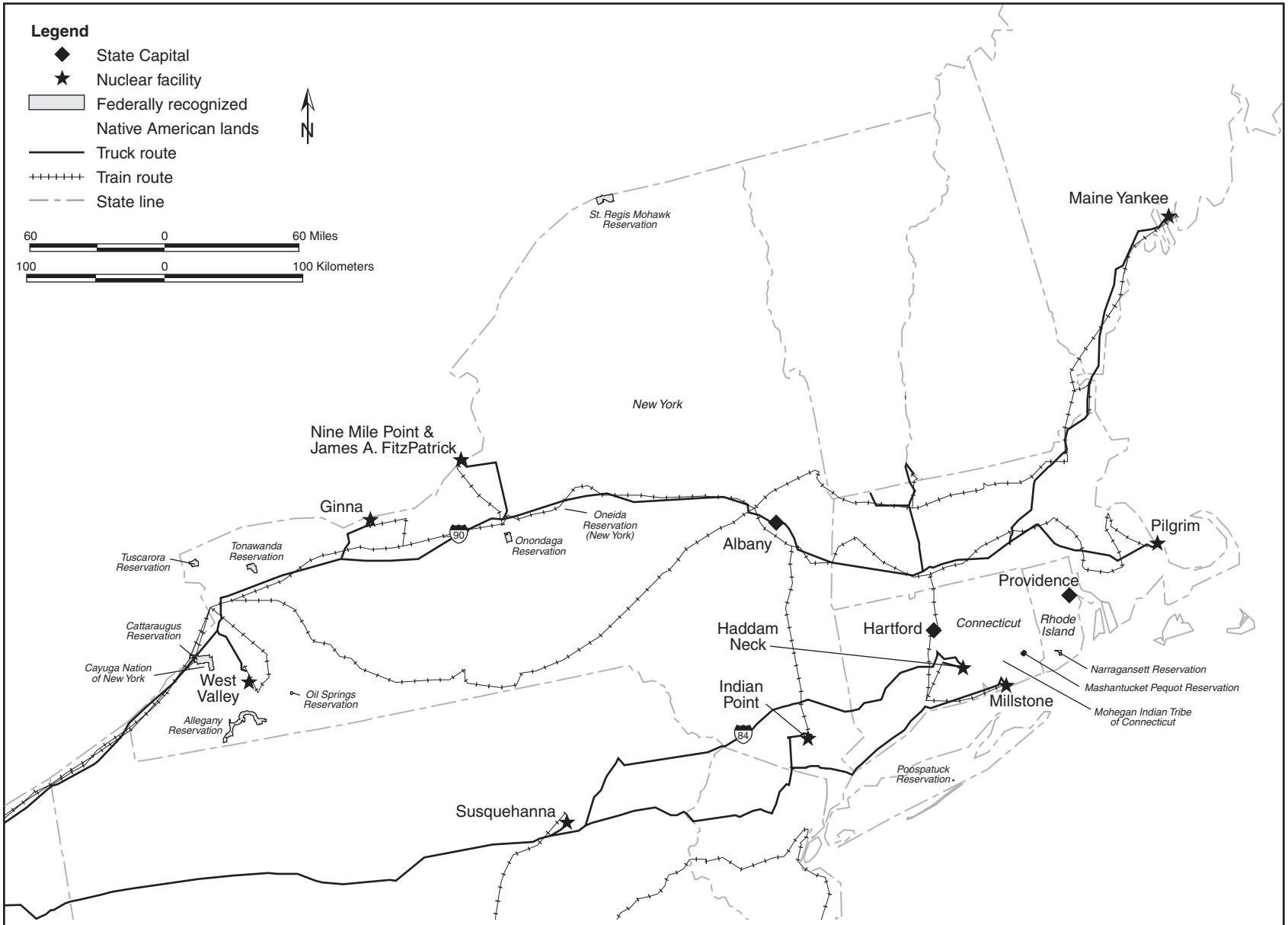


These routes represent the routes analyzed in Chapter 6 and might not be the routes actually used for shipments to the proposed repository at Yucca Mountain. Truck routes comply with U.S. Department of Transportation routing regulations. Rail routes are based on maximizing the distance on mainline track and minimizing the overall distance and number of interchanges between railroads.

Figure J-36. Highway and rail routes used to analyze transportation impacts - Connecticut, Rhode Island, and New York.

Table J-77. Estimated transportation impacts for the States of Delaware, Maryland, Virginia, West Virginia, and the District of Columbia (page 1 of 3).

Impact category	Mostly legal-weight truck	Mostly rail					
		Ending rail node in Nevada[a]					
		Caliente[b]	Dry Lake[c]	Jean[d]	Beowawe[e]	Eccles[f]	Apex[g]
DELAWARE							
Shipments							
Truck (originating/total)	0/1,077	0/0	0/0	0/0	0/0	0/0	0/0
Rail (originating/total)	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Radiological impacts							
Incident-free impacts							
Population (person-rem/LCFs)[h]	$1.6\times10^{0}/8.2\times10^{-4}$	$0.0\times10^{0}/0.0\times10^{0}$	$0.0\times10^{0}/0.0\times10^{0}$	$0.0\times10^{0}/0.0\times10^{0}$	$0.0\times10^{0}/0.0\times10^{0}$	$0.0\times10^{0}/0.0\times10^{0}$	$0.0\times10^{0}/0.0\times10^{0}$
Workers (person-rem/LCFs)	$1.7\times10^{0}/6.9\times10^{-4}$	$0.0\times10^{0}/0.0\times10^{0}$	$0.0\times10^{0}/0.0\times10^{0}$	$0.0\times10^{0}/0.0\times10^{0}$	$0.0\times10^{0}/0.0\times10^{0}$	$0.0\times10^{0}/0.0\times10^{0}$	$0.0\times10^{0}/0.0\times10^{0}$
Accident dose risk							
Population (person-rem/LCFs)	$5.2\times10^{-4}/2.6\times10^{-7}$	$0.0\times10^{0}/0.0\times10^{0}$	$0.0\times10^{0}/0.0\times10^{0}$	$0.0\times10^{0}/0.0\times10^{0}$	$0.0\times10^{0}/0.0\times10^{0}$	$0.0\times10^{0}/0.0\times10^{0}$	$0.0\times10^{0}/0.0\times10^{0}$
Nonradiological impacts							
Vehicle emissions (LCFs)	6.4×10^{-4}	0.0×10^{0}	0.0×10^{0}	0.0×10^{0}	0.0×10^{0}	0.0×10^{0}	0.0×10^{0}
Fatalities	3.1×10^{-4}	0.0×10^{0}	0.0×10^{0}	0.0×10^{0}	0.0×10^{0}	0.0×10^{0}	0.0×10^{0}
MARYLAND							
Shipments							
Truck (originating/total)	867/1,944	0/0	0/0	0/0	0/0	0/0	0/0
Rail (originating/total)	0/0	169/312	169/312	169/312	169/312	169/312	169/312
Radiological impacts							
Incident-free impacts							
Population (person-rem/LCFs)[h]	$2.5\times10^{1}/1.3\times10^{-2}$	$1.0\times10^{1}/5.0\times10^{-3}$	$1.0\times10^{1}/5.0\times10^{-3}$	$1.0\times10^{1}/5.0\times10^{-3}$	$1.0\times10^{1}/5.0\times10^{-3}$	$1.0\times10^{1}/5.0\times10^{-3}$	$1.0\times10^{1}/5.0\times10^{-3}$
Workers (person-rem/LCFs)	$4.8\times10^{1}/1.9\times10^{-2}$	$1.3\times10^{1}/5.1\times10^{-2}$	$1.3\times10^{1}/5.1\times10^{-2}$	$1.3\times10^{1}/5.1\times10^{-2}$	$1.3\times10^{1}/5.1\times10^{-2}$	$1.3\times10^{1}/5.1\times10^{-2}$	$1.3\times10^{1}/5.1\times10^{-2}$
Accident dose risk							
Population (person-rem/LCFs)	$6.6\times10^{-3}/3.3\times10^{-6}$	$3.2\times10^{-3}/1.6\times10^{-6}$	$3.2\times10^{-3}/1.6\times10^{-6}$	$3.2\times10^{-3}/1.6\times10^{-6}$	$3.2\times10^{-3}/1.6\times10^{-6}$	$3.2\times10^{-3}/1.6\times10^{-6}$	$3.2\times10^{-3}/1.6\times10^{-6}$
Nonradiological impacts							
Vehicle emissions (LCFs)	8.4×10^{-3}	3.8×10^{-3}	3.8×10^{-3}	3.8×10^{-3}	3.8×10^{-3}	3.8×10^{-3}	3.8×10^{-3}
Fatalities	0.007	0.007	0.007	0.007	0.007	0.007	0.007

Table J-77. Estimated transportation impacts for the States of Delaware, Maryland, Virginia, West Virginia, and the District of Columbia (page 2 of 3).

Impact category	Mostly legal-weight truck	Mostly rail					
		Ending rail node in Nevada[a]					
		Caliente[b]	Dry Lake[c]	Jean[d]	Beowawe[e]	Eccles[f]	Apex[g]
VIRGINIA							
Shipments							
Truck (originating/total)	1,538/3,409	0/0	0/0	0/0	0/0	0/0	0/0
Rail (originating/total)	0/0	340/340	340/340	340/340	340/340	340/340	340/340
Radiological impacts							
Incident-free impacts							
Population (person-rem/LCFs)[h]	$2.2\times10^{1}/1.1\times10^{-2}$	$9.6\times10^{0}/4.8\times10^{-3}$	$9.6\times10^{0}/4.8\times10^{-3}$	$9.6\times10^{0}/4.8\times10^{-3}$	$9.6\times10^{0}/4.8\times10^{-3}$	$9.6\times10^{0}/4.8\times10^{-3}$	$9.6\times10^{0}/4.8\times10^{-3}$
Workers (person-rem/LCFs)	$8.2\times10^{1}/3.3\times10^{-2}$	$2.6\times10^{1}/1.0\times10^{-2}$	$2.6\times10^{1}/1.0\times10^{-2}$	$2.6\times10^{1}/1.0\times10^{-2}$	$2.6\times10^{1}/1.0\times10^{-2}$	$2.6\times10^{1}/1.0\times10^{-2}$	$2.6\times10^{1}/1.0\times10^{-2}$
Accident dose risk							
Population (person-rem/LCFs)	$2.1\times10^{-3}/1.1\times10^{-6}$	$2.1\times10^{-3}/1.0\times10^{-6}$	$2.1\times10^{-3}/1.0\times10^{-6}$	$2.1\times10^{-3}/1.0\times10^{-6}$	$2.1\times10^{-3}/1.0\times10^{-6}$	$2.1\times10^{-3}/1.0\times10^{-6}$	$2.1\times10^{-3}/1.0\times10^{-6}$
Nonradiological impacts							
Vehicle emissions (LCFs)	3.4×10^{-3}	2.8×10^{-3}	2.8×10^{-3}	2.8×10^{-3}	2.8×10^{-3}	2.8×10^{-3}	2.8×10^{-3}
Fatalities	0.027	0.011	0.011	0.011	0.011	0.011	0.011
WEST VIRGINIA							
Shipments							
Truck (originating/total)	0/3,409	0/0	0/0	0/0	0/0	0/0	0/0
Rail (originating/total)	0/0	0/509	0/509	0/509	0/509	0/509	0/509
Radiological impacts							
Incident-free impacts							
Population (person-rem/LCFs)[h]	$3.4\times10^{1}/1.7\times10^{-2}$	$1.6\times10^{0}/8.1\times10^{-4}$	$1.6\times10^{0}/8.1\times10^{-4}$	$1.6\times10^{0}/8.1\times10^{-4}$	$1.6\times10^{0}/8.1\times10^{-4}$	$1.6\times10^{0}/8.1\times10^{-4}$	$1.6\times10^{0}/8.1\times10^{-4}$
Workers (person-rem/LCFs)	$6.2\times10^{1}/2.5\times10^{-2}$	$6.6\times10^{0}/2.6\times10^{-3}$	$6.6\times10^{0}/2.6\times10^{-3}$	$6.6\times10^{0}/2.6\times10^{-3}$	$6.6\times10^{0}/2.6\times10^{-3}$	$6.6\times10^{0}/2.6\times10^{-3}$	$6.6\times10^{0}/2.6\times10^{-3}$
Accident dose risk							
Population (person-rem/LCFs)	$1.8\times10^{-3}/9.2\times10^{-7}$	$3.9\times10^{-4}/2.0\times10^{-7}$	$3.9\times10^{-4}/2.0\times10^{-7}$	$3.9\times10^{-4}/2.0\times10^{-7}$	$3.9\times10^{-4}/2.0\times10^{-7}$	$3.9\times10^{-4}/2.0\times10^{-7}$	$3.9\times10^{-4}/2.0\times10^{-7}$
Nonradiological impacts							
Vehicle emissions (LCFs)	6.9×10^{-3}	8.5×10^{-4}	8.5×10^{-4}	8.5×10^{-4}	8.5×10^{-4}	8.5×10^{-4}	8.5×10^{-4}
Fatalities	0.032	0.004	0.004	0.004	0.004	0.004	0.004

Table J-77. Estimated transportation impacts for the States of Delaware, Maryland, Virginia, West Virginia, and the District of Columbia (page 3 of 3).

Impact category	Mostly legal-weight truck	Mostly rail					
		Ending rail node in Nevada[a]					
		Caliente[b]	Dry Lake[c]	Jean[d]	Beowawe[e]	Eccles[f]	Apex[g]
DISTRICT OF COLUMBIA							
Shipments							
Truck (originating/total)	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Rail (originating/total)	0/0	0/312	0/312	0/312	0/312	0/312	0/312
Radiological impacts							
Incident-free impacts							
Population (person-rem/LCFs)[h]	0.0×10^{0}/0.0×10^{0}	2.7×10^{0}/1.3×10^{-3}	2.7×10^{0}/1.3×10^{-3}	2.7×10^{0}/1.3×10^{-3}	2.7×10^{0}/1.3×10^{-3}	2.7×10^{0}/1.3×10^{-3}	2.7×10^{0}/1.3×10^{-3}
Workers (person-rem/LCFs)	0.0×10^{0}/0.0×10^{0}	5.9×10^{-1}/2.4×10^{-4}	5.9×10^{-1}/2.4×10^{-4}	5.9×10^{-1}/2.4×10^{-4}	5.9×10^{-1}/2.4×10^{-4}	5.9×10^{-1}/2.4×10^{-4}	5.9×10^{-1}/2.4×10^{-4}
Accident dose risk							
Population (person-rem/LCFs)	0.0×10^{0}/0.0×10^{0}	5.0×10^{-2}/2.5×10^{-5}	5.0×10^{-2}/2.5×10^{-5}	5.0×10^{-2}/2.5×10^{-5}	5.0×10^{-2}/2.5×10^{-5}	5.0×10^{-2}/2.5×10^{-5}	5.0×10^{-2}/2.5×10^{-5}
Nonradiological impacts							
Vehicle emissions (LCFs)	0.0×10^{0}	1.2×10^{-3}	1.2×10^{-3}	1.2×10^{-3}	1.2×10^{-3}	1.2×10^{-3}	1.2×10^{-3}
Fatalities	0.0×10^{0}	4.8×10^{-3}	4.8×10^{-3}	4.8×10^{-3}	4.8×10^{-3}	4.8×10^{-3}	4.8×10^{-3}

a. Under the mostly rail scenario, rail shipments would arrive in Nevada at one of six existing rail nodes. Impacts would vary according to the node. From that node, DOE would use one of the rail or heavy-haul implementing alternatives to complete the transportation to Yucca Mountain (see Section J.1.2).

b. For heavy-haul truck transportation, the Caliente junction is the location of the proposed Caliente intermodal transfer station for heavy-haul trucks near the town of Caliente in eastern Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on one of the Caliente, Caliente/Chalk Mountain, or Caliente/Las Vegas routes. For branch rail line transportation, railcars would transfer via the Caliente Option to the Caliente Corridor at the Caliente junction.

c. For heavy-haul truck transportation, the Dry Lake junction is near the location of the proposed Apex/Dry Lake intermodal transfer station for heavy-haul trucks in southeast Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on the Apex/Dry Lake route.

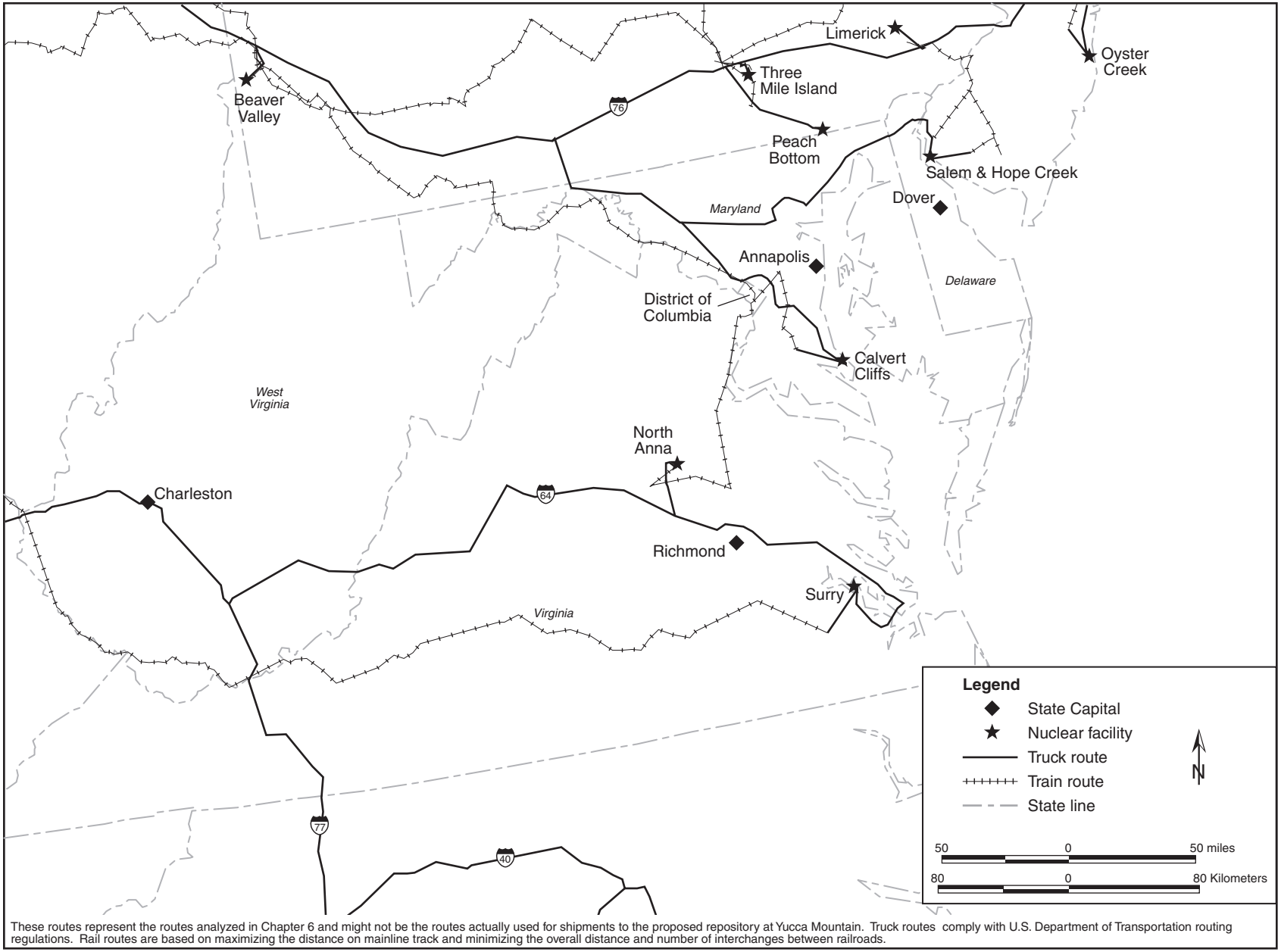
d. For heavy-haul truck transportation, the Jean junction is near the location of the proposed Sloan/Jean intermodal transfer station for heavy-haul trucks in southern Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on the Sloan/Jean route. For branch rail line transportation, railcars would transfer from the mainline railroad via the Wilson Pass or Stateline Pass Option of the Jean Corridor, near the Jean junction.

e. For branch rail line transportation, railcars would transfer from the mainline railroad at the Beowawe junction in north-central Nevada to the Carlin Corridor.

f. For branch rail line transportation, railcars would transfer from the mainline railroad at the Eccles junction east of Caliente, Nevada, via the Eccles Option or nearby via the Crestline Option of the Caliente or Caliente-Chalk Mountain Corridor. Impacts in states outside Nevada would be the same for the Eccles and Crestline Options of the Caliente and Caliente-Chalk Mountain Corridors.

g. For branch rail line transportation, railcars would transfer from the mainline railroad at the Apex junction in southeast Nevada, possibly via the Valley Connection, to the Valley Modified Corridor.

h. LCF = latent cancer fatality.



These routes represent the routes analyzed in Chapter 6 and might not be the routes actually used for shipments to the proposed repository at Yucca Mountain. Truck routes comply with U.S. Department of Transportation routing regulations. Rail routes are based on maximizing the distance on mainline track and minimizing the overall distance and number of interchanges between railroads.

Figure J-37. Highway and rail routes used to analyze transportation impacts - Delaware, Maryland, Virginia, West Virginia, and the District of Columbia.

Table J-78. Estimated transportation impacts for the State of Florida.

Impact category	Mostly legal-weight truck	Mostly rail					
		Ending rail node in Nevada[a]					
		Caliente[b]	Dry Lake[c]	Jean[d]	Beowawe[e]	Eccles[f]	Apex[g]
FLORIDA							
Shipments							
Truck (originating/total)	1,666/2,359	491/491	491/491	491/491	491/491	491/491	491/491
Rail (originating/total)	0/0	202/202	202/202	202/202	202/202	202/202	202/202
Radiological impacts							
Incident-free impacts							
Population (person-rem/LCFs)[h]	4.5×10^{1}/2.2×10^{-2}	2.3×10^{1}/1.2×10^{-2}	2.3×10^{1}/1.2×10^{-2}	2.8×10^{1}/1.4×10^{-2}	2.3×10^{1}/1.2×10^{-2}	2.3×10^{1}/1.2×10^{-2}	2.3×10^{1}/1.2×10^{-2}
Workers (person-rem/LCFs)	1.1×10^{2}/4.3×10^{-2}	4.2×10^{1}/1.7×10^{-2}	4.2×10^{1}/1.7×10^{-2}	5.0×10^{1}/2.0×10^{-2}	4.2×10^{1}/1.7×10^{-2}	4.2×10^{1}/1.7×10^{-2}	4.2×10^{1}/1.7×10^{-2}
Accident dose risk							
Population (person-rem/LCFs)	1.5×10^{-3}/7.4×10^{-7}	7.4×10^{-3}/3.7×10^{-6}	7.4×10^{-3}/3.7×10^{-6}	9.9×10^{-3}/5.0×10^{-6}	7.4×10^{-3}/3.7×10^{-6}	7.4×10^{-3}/3.7×10^{-6}	7.4×10^{-3}/3.7×10^{-6}
Nonradiological impacts							
Vehicle emissions (LCFs)	1.4×10^{-2}	8.2×10^{-3}	8.2×10^{-3}	1.1×10^{-2}	8.2×10^{-3}	8.2×10^{-3}	8.2×10^{-3}
Fatalities	0.019	0.025	0.025	0.047	0.025	0.025	0.025

a. Under the mostly rail scenario, rail shipments would arrive in Nevada at one of six existing rail nodes. Impacts would vary according to the node. From that node, DOE would use one of the rail or heavy-haul implementing alternatives to complete the transportation to Yucca Mountain (see Section J.1.2).

b. For heavy-haul truck transportation, the Caliente junction is the location of the proposed Caliente intermodal transfer station for heavy-haul trucks near the town of Caliente in eastern Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on one of the Caliente, Caliente/Chalk Mountain, or Caliente/Las Vegas routes. For branch rail line transportation, railcars would transfer via the Caliente Option to the Caliente Corridor at the Caliente junction.

c. For heavy-haul truck transportation, the Dry Lake junction is near the location of the proposed Apex/Dry Lake intermodal transfer station for heavy-haul trucks in southeast Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on the Apex/Dry Lake route.

d. For heavy-haul truck transportation, the Jean junction is near the location of the proposed Sloan/Jean intermodal transfer station for heavy-haul trucks in southern Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on the Sloan/Jean route. For branch rail line transportation, railcars would transfer from the mainline railroad via the Wilson Pass or Stateline Pass Option of the Jean Corridor, near the Jean junction.

e. For branch rail line transportation, railcars would transfer from the mainline railroad at the Beowawe junction in north-central Nevada to the Carlin Corridor.

f. For branch rail line transportation, railcars would transfer from the mainline railroad at the Eccles junction east of Caliente, Nevada, via the Eccles Option or nearby via the Crestline Option of the Caliente or Caliente-Chalk Mountain Corridor. Impacts in states outside Nevada would be the same for the Eccles and Crestline Options of the Caliente and Caliente-Chalk Mountain Corridors.

g. For branch rail line transportation, railcars would transfer from the mainline railroad at the Apex junction in southeast Nevada, possibly via the Valley Connection, to the Valley Modified Corridor.

h. LCF = latent cancer fatality.

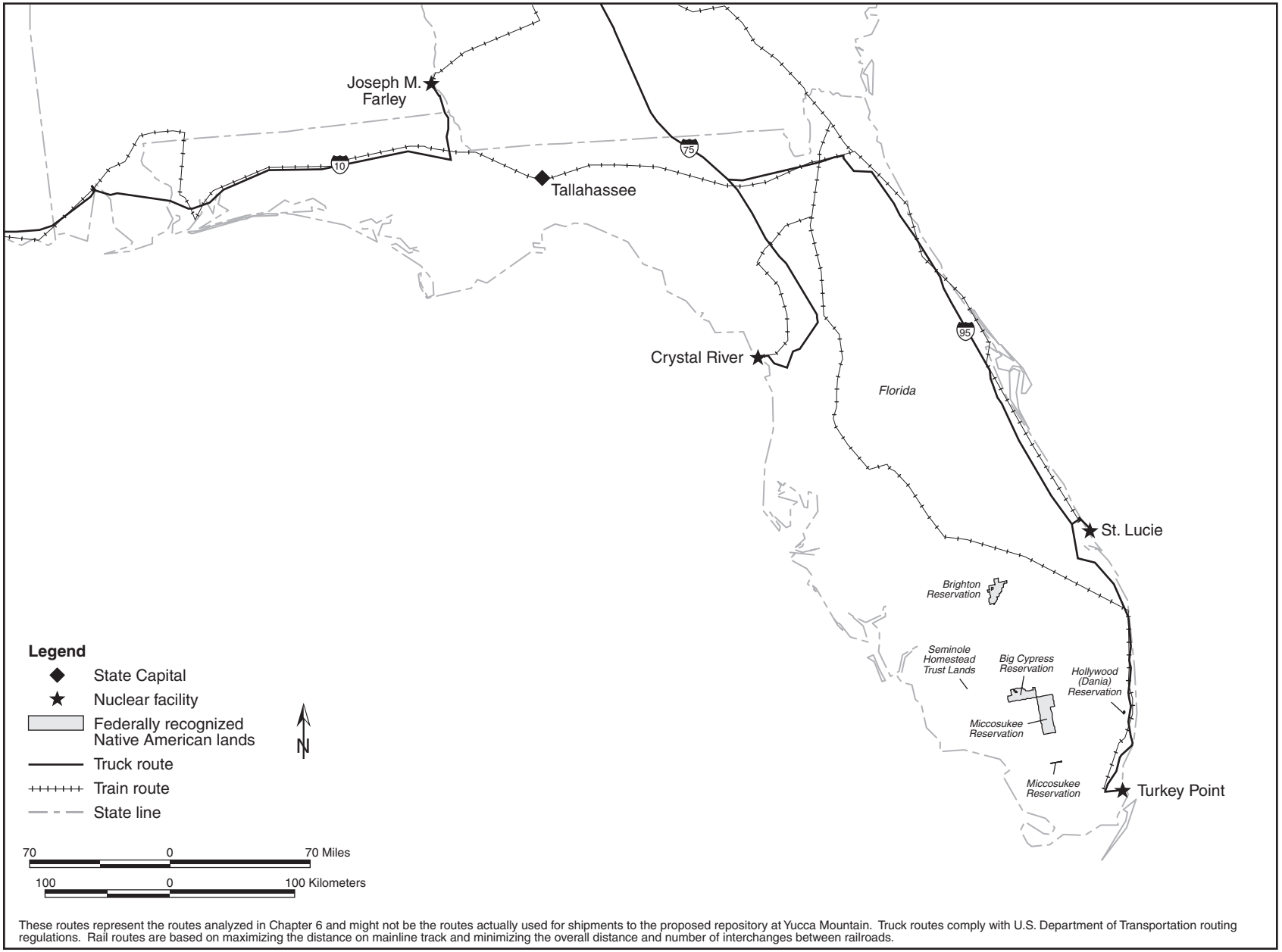


Figure J-38. Highway and rail routes used to analyze transportation impacts - Florida.

Table J-79. Estimated transportation impacts for the State of Iowa.

Impact category	Mostly legal-weight truck	Mostly rail					
		Ending rail node in Nevada[a]					
		Caliente[b]	Dry Lake[c]	Jean[d]	Beowawe[e]	Eccles[f]	Apex[g]
IOWA							
Shipments							
Truck (originating/total)	324/40,539	0/1,079	0/1,079	0/1,079	0/1,079	0/1,079	0/1,079
Rail (originating/total)	0/0	57/3,301	57/3,301	57/3,301	57/3,301	57/3,301	57/3,301
Radiological impacts							
Incident-free impacts							
Population (person-rem/LCFs)[h]	2.7×10^{2}/1.4×10^{-1}	6.2×10^{1}/3.1×10^{-2}	6.2×10^{1}/3.1×10^{-2}	6.0×10^{1}/3.0×10^{-2}	6.2×10^{1}/3.1×10^{-2}	6.2×10^{1}/3.1×10^{-2}	6.2×10^{1}/3.1×10^{-2}
Workers (person-rem/LCFs)	8.7×10^{2}/3.5×10^{-1}	1.4×10^{2}/5.7×10^{-2}	1.4×10^{2}/5.7×10^{-2}	1.3×10^{2}/5.4×10^{-2}	1.4×10^{2}/5.7×10^{-2}	1.4×10^{2}/5.7×10^{-2}	1.4×10^{2}/5.7×10^{-2}
Accident dose risk							
Population (person-rem/LCFs)	4.2×10^{-3}/2.1×10^{-6}	5.8×10^{-2}/2.9×10^{-5}	5.8×10^{-2}/2.9×10^{-5}	5.4×10^{-2}/2.7×10^{-5}	5.8×10^{-2}/2.9×10^{-5}	5.8×10^{-2}/2.9×10^{-5}	5.8×10^{-2}/2.9×10^{-5}
Nonradiological impacts							
Vehicle emissions (LCFs)	1.4×10^{-2}	2.7×10^{-2}	2.7×10^{-2}	2.6×10^{-2}	2.7×10^{-2}	2.7×10^{-2}	2.7×10^{-2}
Fatalities	0.25	0.09	0.09	0.09	0.09	0.09	0.09

a. Under the mostly rail scenario, rail shipments would arrive in Nevada at one of six existing rail nodes. Impacts would vary according to the node. From that node, DOE would use one of the rail or heavy-haul implementing alternatives to complete the transportation to Yucca Mountain (see Section J.1.2).

b. For heavy-haul truck transportation, the Caliente junction is the location of the proposed Caliente intermodal transfer station for heavy-haul trucks near the town of Caliente in eastern Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on one of the Caliente, Caliente/Chalk Mountain, or Caliente/Las Vegas routes. For branch rail line transportation, railcars would transfer via the Caliente Option to the Caliente Corridor at the Caliente junction.

c. For heavy-haul truck transportation, the Dry Lake junction is near the location of the proposed Apex/Dry Lake intermodal transfer station for heavy-haul trucks in southeast Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on the Apex/Dry Lake route.

d. For heavy-haul truck transportation, the Jean junction is near the location of the proposed Sloan/Jean intermodal transfer station for heavy-haul trucks in southern Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on the Sloan/Jean route. For branch rail line transportation, railcars would transfer from the mainline railroad via the Wilson Pass or Stateline Pass Option of the Jean Corridor, near the Jean junction.

e. For branch rail line transportation, railcars would transfer from the mainline railroad at the Beowawe junction in north-central Nevada to the Carlin Corridor.

f. For branch rail line transportation, railcars would transfer from the mainline railroad at the Eccles junction east of Caliente, Nevada, via the Eccles Option or nearby via the Crestline Option of the Caliente or Caliente-Chalk Mountain Corridor. Impacts in states outside Nevada would be the same for the Eccles and Crestline Options of the Caliente and Caliente-Chalk Mountain Corridors.

g. For branch rail line transportation, railcars would transfer from the mainline railroad at the Apex junction in southeast Nevada, possibly via the Valley Connection, to the Valley Modified Corridor.

h. LCF = latent cancer fatality.

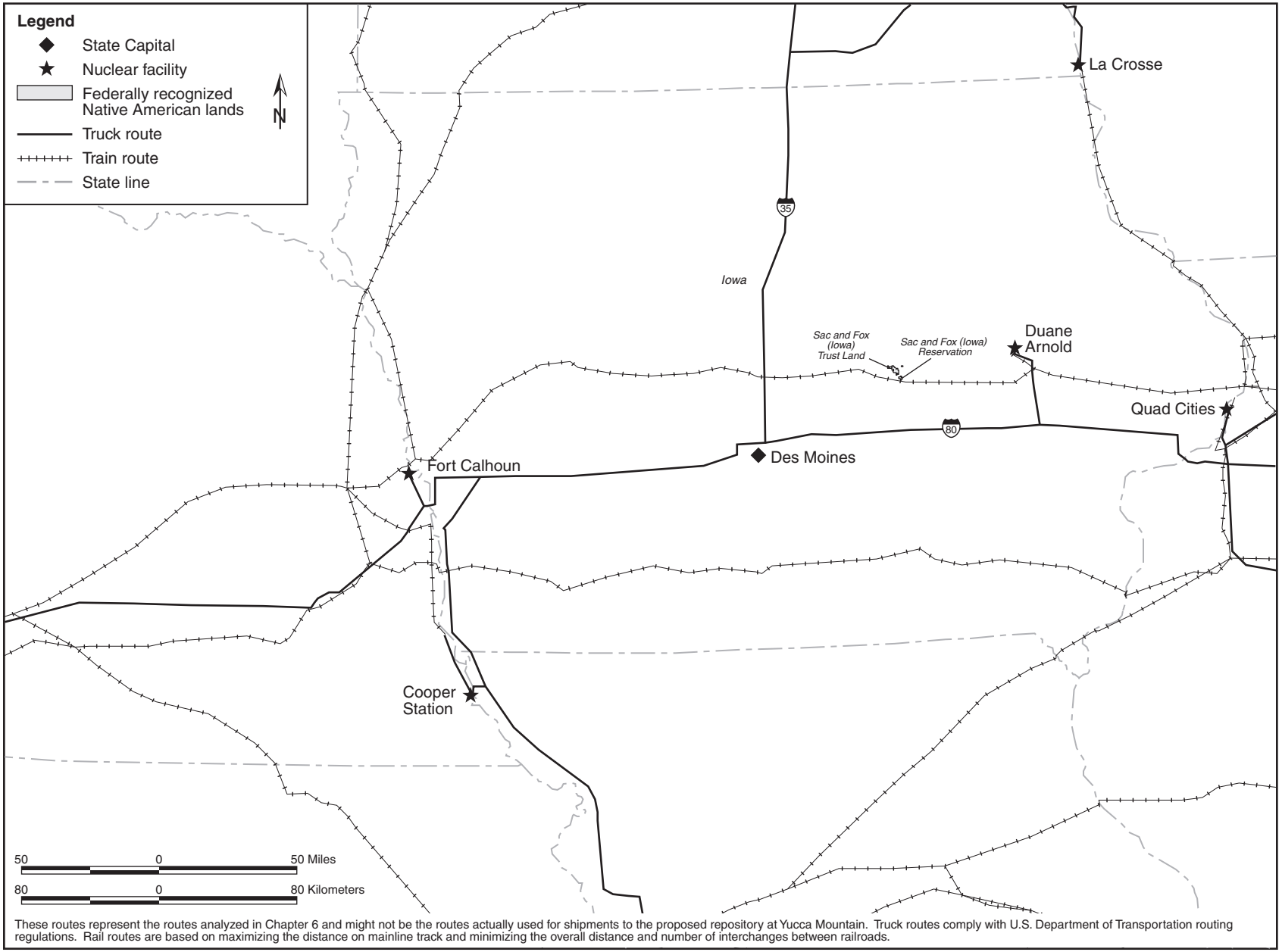


Figure J-39. Highway and rail routes used to analyze transportation impacts - Iowa.

Table J-80. Estimated transportation impacts for the States of Idaho, Oregon, and Washington (page 1 of 2).

Impact category	Mostly legal-weight truck	Mostly rail					
		Ending rail node in Nevada[a]					
		Caliente[b]	Dry Lake[c]	Jean[d]	Beowawe[e]	Eccles[f]	Apex[g]
IDAHO							
Shipments							
Truck (originating/total)	1,088/4,412	0/0	0/0	0/0	0/0	0/0	0/0
Rail (originating/total)	300/300	433/1,082	433/1,049	433/1,049	433/1,049	433/1,082	433/1,049
Radiological impacts							
Incident-free impacts							
Population (person-rem/LCFs)[h]	4.2×10^{1}/2.1×10^{-2}	1.4×10^{1}/7.0×10^{-3}	1.4×10^{1}/7.0×10^{-3}	4.8×10^{1}/2.4×10^{-2}	1.4×10^{1}/7.0×10^{-3}	1.4×10^{1}/7.0×10^{-3}	1.4×10^{1}/7.0×10^{-3}
Workers (person-rem/LCFs)	1.4×10^{2}/5.5×10^{-2}	4.7×10^{1}/1.9×10^{-2}	4.7×10^{1}/1.9×10^{-2}	1.7×10^{2}/6.8×10^{-2}	4.7×10^{1}/1.9×10^{-2}	4.7×10^{1}/1.9×10^{-2}	4.7×10^{1}/1.9×10^{-2}
Accident dose risk							
Population (person-rem/LCFs)	1.7×10^{-3}/8.7×10^{-7}	7.9×10^{-4}/4.0×10^{-7}	7.9×10^{-4}/4.0×10^{-7}	2.4×10^{-3}/1.2×10^{-6}	7.9×10^{-4}/4.0×10^{-7}	7.9×10^{-4}/4.0×10^{-7}	7.9×10^{-4}/4.0×10^{-7}
Nonradiological impacts							
Vehicle emissions (LCFs)	5.2×10^{-3}	4.2×10^{-3}	4.2×10^{-3}	8.0×10^{-3}	4.2×10^{-3}	4.2×10^{-3}	4.2×10^{-3}
Fatalities	0.018	0.039	0.039	0.048	0.039	0.039	0.039
OREGON							
Shipments							
Truck (originating/total)	195/3,324	0/0	0/0	0/0	0/0	0/0	0/0
Rail (originating/total)	0/0	33/649	33/649	33/649	33/649	33/649	33/649
Radiological impacts							
Incident-free impacts							
Population (person-rem/LCFs)[h]	2.3×10^{1}/1.2×10^{-2}	3.7×10^{0}/1.8×10^{-3}	4.4×10^{0}/2.2×10^{-3}	4.4×10^{0}/2.2×10^{-3}	4.4×10^{0}/2.2×10^{-3}	3.7×10^{0}/1.8×10^{-3}	4.4×10^{0}/2.2×10^{-3}
Workers (person-rem/LCFs)	7.9×10^{1}/3.2×10^{-2}	1.8×10^{1}/7.3×10^{-3}	1.8×10^{1}/7.2×10^{-3}	1.8×10^{1}/7.2×10^{-3}	1.8×10^{1}/7.2×10^{-3}	1.8×10^{1}/7.3×10^{-3}	1.8×10^{1}/7.2×10^{-3}
Accident dose risk							
Population (person-rem/LCFs)	4.4×10^{-4}/2.2×10^{-7}	1.7×10^{-3}/8.5×10^{-7}	2.5×10^{-3}/1.2×10^{-6}	2.5×10^{-3}/1.2×10^{-6}	2.5×10^{-3}/1.2×10^{-6}	1.7×10^{-3}/8.5×10^{-7}	2.5×10^{-3}/1.2×10^{-6}
Nonradiological impacts							
Vehicle emissions (LCFs)	1.5×10^{-3}	1.7×10^{-3}	2.1×10^{-3}	2.1×10^{-3}	2.1×10^{-3}	1.7×10^{-3}	2.1×10^{-3}
Fatalities	0.048	0.023	0.022	0.022	0.022	0.023	0.022

Table J-80. Estimated transportation impacts for the States of Idaho, Oregon, and Washington (page 2 of 2).

Impact category	Mostly legal-weight truck	Mostly rail					
		Ending rail node in Nevada[a]					
		Caliente[b]	Dry Lake[c]	Jean[d]	Beowawe[e]	Eccles[d]	Apex[e]
WASHINGTON							
Shipments							
Truck (originating/total)	3,129/3,324	0/0	0/0	0/0	0/0	0/0	0/0
Rail (originating/total)	0/0	616/616	616/616	616/616	616/616	616/616	616/616
Radiological impacts							
Incident-free impacts							
Population (person-rem/LCFs)[b]	9.7×10^{0}/4.9×10^{-3}	1.1×10^{1}/5.7×10^{-3}	1.1×10^{1}/5.7×10^{-3}	1.1×10^{1}/5.7×10^{-3}	1.1×10^{1}/5.7×10^{-3}	1.1×10^{1}/5.7×10^{-3}	1.1×10^{1}/5.7×10^{-3}
Workers (person-rem/LCFs)	7.6×10^{1}/3.0×10^{-2}	3.2×10^{1}/1.3×10^{-2}	3.2×10^{1}/1.3×10^{-2}	3.2×10^{1}/1.3×10^{-2}	3.2×10^{1}/1.3×10^{-2}	3.2×10^{1}/1.3×10^{-2}	3.2×10^{1}/1.3×10^{-2}
Accident dose risk							
Population (person-rem/LCFs)	8.8×10^{-4}/4.4×10^{-7}	6.7×10^{-4}/3.4×10^{-7}	6.7×10^{-4}/3.4×10^{-7}	6.7×10^{-4}/3.4×10^{-7}	6.7×10^{-4}/3.4×10^{-7}	6.7×10^{-4}/3.4×10^{-7}	6.7×10^{-4}/3.4×10^{-7}
Nonradiological impacts							
Vehicle emissions (LCFs)	2.7×10^{-3}	2.2×10^{-3}	2.2×10^{-3}	2.2×10^{-3}	2.2×10^{-3}	2.2×10^{-3}	2.2×10^{-3}
Fatalities	0.001	0.005	0.005	0.005	0.005	0.005	0.005

a. Under the mostly rail scenario, rail shipments would arrive in Nevada at one of six existing rail nodes. Impacts would vary according to the node. From that node, DOE would use one of the rail or heavy-haul implementing alternatives to complete the transportation to Yucca Mountain (see Section J.1.2).

b. For heavy-haul truck transportation, the Caliente junction is the location of the proposed Caliente intermodal transfer station for heavy-haul trucks near the town of Caliente in eastern Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on one of the Caliente, Caliente/Chalk Mountain, or Caliente/Las Vegas routes. For branch rail line transportation, railcars would transfer via the Caliente Option to the Caliente Corridor at the Caliente junction.

c. For heavy-haul truck transportation, the Dry Lake junction is near the location of the proposed Apex/Dry Lake intermodal transfer station for heavy-haul trucks in southeast Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on the Apex/Dry Lake route.

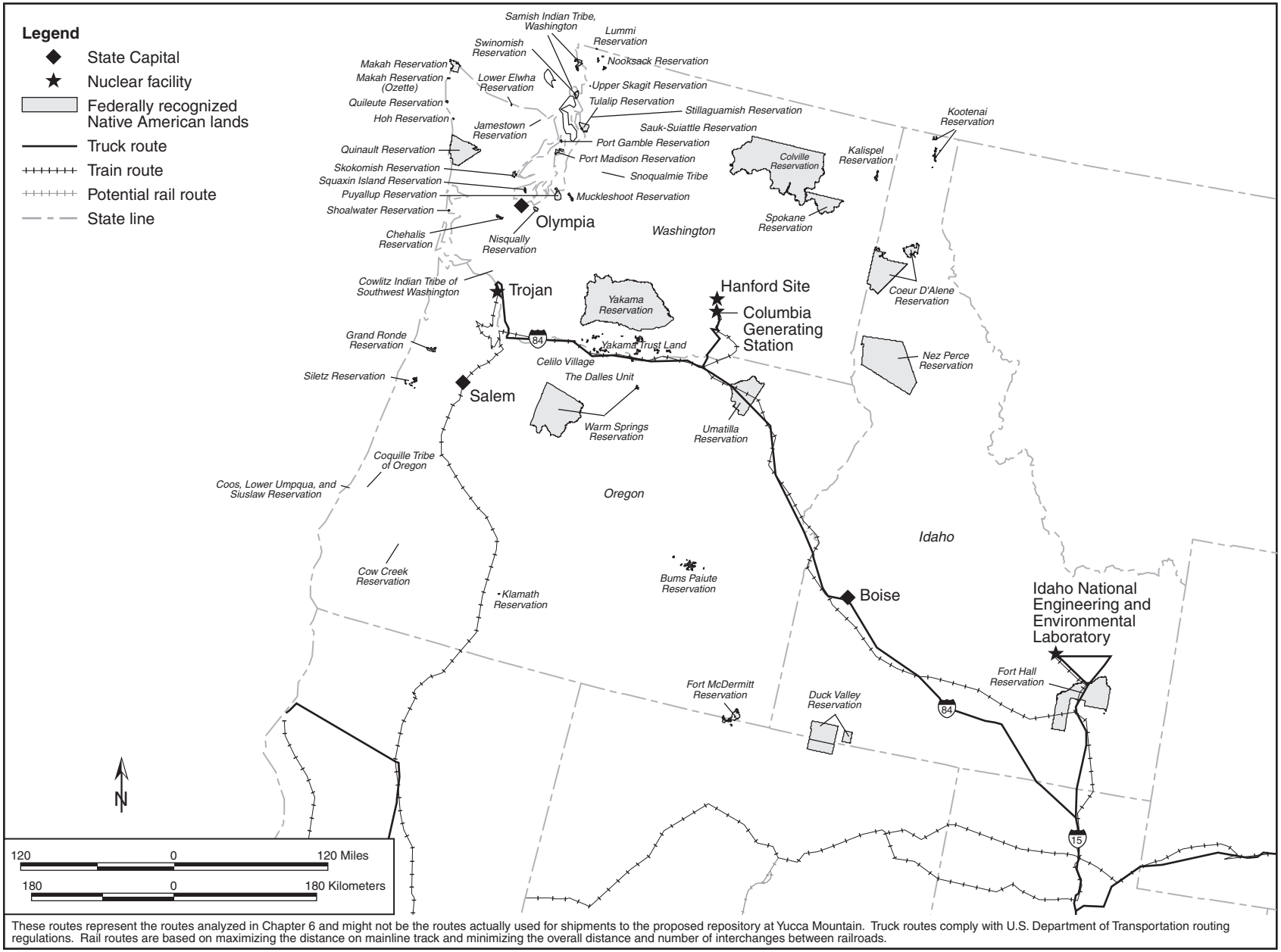
d. For heavy-haul truck transportation, the Jean junction is near the location of the proposed Sloan/Jean intermodal transfer station for heavy-haul trucks in southern Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on the Sloan/Jean route. For branch rail line transportation, railcars would transfer from the mainline railroad via the Wilson Pass or Stateline Pass Option of the Jean Corridor, near the Jean junction.

e. For branch rail line transportation, railcars would transfer from the mainline railroad at the Beowawe junction in north-central Nevada to the Carlin Corridor.

f. For branch rail line transportation, railcars would transfer from the mainline railroad at the Eccles junction east of Caliente, Nevada, via the Eccles Option or nearby via the Crestline Option of the Caliente or Caliente-Chalk Mountain Corridor. Impacts in states outside Nevada would be the same for the Eccles and Crestline Options of the Caliente and Caliente-Chalk Mountain Corridors.

g. For branch rail line transportation, railcars would transfer from the mainline railroad at the Apex junction in southeast Nevada, possibly via the Valley Connection, to the Valley Modified Corridor.

h. LCF = latent cancer fatality.



These routes represent the routes analyzed in Chapter 6 and might not be the routes actually used for shipments to the proposed repository at Yucca Mountain. Truck routes comply with U.S. Department of Transportation routing regulations. Rail routes are based on maximizing the distance on mainline track and minimizing the overall distance and number of interchanges between railroads.

Figure J-40. Highway and rail routes used to analyze transportation impacts - Idaho, Oregon, and Washington.

Table J-81. Estimated transportation impacts for the States of Indiana, Michigan, and Ohio (page 1 of 2).

Impact category	Mostly legal-weight truck	Mostly rail					
		Ending rail node in Nevada[a]					
		Caliente[b]	Dry Lake[c]	Jean[d]	Beowawe[e]	Eccles[d]	Apex[e]
INDIANA							
Shipments							
Truck (originating/total)	0/17,258	0/580	0/580	0/580	0/580	0/580	0/580
Rail (originating/total)	0/0	0/5,980	0/5,980	0/5,778	0/5,980	0/5,980	0/5,980
Radiological impacts							
Incident-free impacts							
Population (person-rem/LCFs)[h]	1.2×10^{2}/6.0×10^{-2}	5.5×10^{1}/2.7×10^{-2}	5.5×10^{1}/2.7×10^{-2}	5.4×10^{1}/2.7×10^{-2}	5.5×10^{1}/2.7×10^{-2}	5.5×10^{1}/2.7×10^{-2}	5.5×10^{1}/2.7×10^{-2}
Workers (person-rem/LCFs)	2.5×10^{2}/9.9×10^{-2}	8.1×10^{1}/3.2×10^{-2}	8.1×10^{1}/3.2×10^{-2}	7.9×10^{1}/3.2×10^{-2}	8.1×10^{1}/3.2×10^{-2}	8.1×10^{1}/3.2×10^{-2}	8.1×10^{1}/3.2×10^{-2}
Accident dose risk							
Population (person-rem/LCFs)	8.8×10^{-3}/4.4×10^{-6}	2.4×10^{-2}/1.2×10^{-5}	2.4×10^{-2}/1.2×10^{-5}	2.3×10^{-2}/1.2×10^{-5}	2.4×10^{-2}/1.2×10^{-5}	2.4×10^{-2}/1.2×10^{-5}	2.4×10^{-2}/1.2×10^{-5}
Nonradiological impacts							
Vehicle emissions (LCFs)	2.5×10^{-2}	2.6×10^{-2}	2.6×10^{-2}	2.6×10^{-2}	2.6×10^{-2}	2.6×10^{-2}	2.6×10^{-2}
Fatalities	0.05	0.12	0.12	0.12	0.12	0.12	0.12
MICHIGAN							
Shipments							
Truck (originating/total)	1,728/1,728	0/0	0/0	0/0	0/0	0/0	0/0
Rail (originating/total)	0/0	287/287	287/287	287/287	287/287	287/287	287/287
Radiological impacts							
Incident-free impacts							
Population (person-rem/LCFs)[h]	8.7×10^{0}/4.3×10^{-3}	4.7×10^{0}/2.4×10^{-3}	4.7×10^{0}/2.4×10^{-3}	4.7×10^{0}/2.4×10^{-3}	4.7×10^{0}/2.4×10^{-3}	4.7×10^{0}/2.4×10^{-3}	4.7×10^{0}/2.4×10^{-3}
Workers (person-rem/LCFs)	4.9×10^{1}/2.0×10^{-2}	1.7×10^{1}/6.7×10^{-3}	1.7×10^{1}/6.7×10^{-3}	1.7×10^{1}/6.7×10^{-3}	1.7×10^{1}/6.7×10^{-3}	1.7×10^{1}/6.7×10^{-3}	1.7×10^{1}/6.7×10^{-3}
Accident dose risk							
Population (person-rem/LCFs)	6.0×10^{-4}/3.0×10^{-7}	4.9×10^{-3}/2.4×10^{-6}	4.9×10^{-3}/2.4×10^{-6}	4.9×10^{-3}/2.4×10^{-6}	4.9×10^{-3}/2.4×10^{-6}	4.9×10^{-3}/2.4×10^{-6}	4.9×10^{-3}/2.4×10^{-6}
Nonradiological impacts							
Vehicle emissions (LCFs)	1.4×10^{-3}	1.6×10^{-3}	1.6×10^{-3}	1.6×10^{-3}	1.6×10^{-3}	1.6×10^{-3}	1.6×10^{-3}
Fatalities	0.006	0.010	0.010	0.010	0.010	0.010	0.010
OHIO							
Shipments							
Truck (originating/total)	636/12,121	0/580	0/580	0/580	0/580	0/580	0/580
Rail (originating/total)	0/0	106/2,381	106/2,381	106/2,381	106/2,381	106/2,381	106/2,381
Radiological impacts							
Incident-free impacts							
Population (person-rem/LCFs)[h]	1.6×10^{2}/7.9×10^{-2}	8.5×10^{1}/4.3×10^{-2}	8.5×10^{1}/4.3×10^{-2}	8.5×10^{1}/4.3×10^{-2}	8.5×10^{1}/4.3×10^{-2}	8.5×10^{1}/4.3×10^{-2}	8.5×10^{1}/4.3×10^{-2}
Workers (person-rem/LCFs)	3.2×10^{2}/1.3×10^{-1}	9.1×10^{1}/3.6×10^{-2}	9.1×10^{1}/3.6×10^{-2}	9.1×10^{1}/3.6×10^{-2}	9.1×10^{1}/3.6×10^{-2}	9.1×10^{1}/3.6×10^{-2}	9.1×10^{1}/3.6×10^{-2}
Accident dose risk							
Population (person-rem/LCFs)	7.7×10^{-3}/3.8×10^{-6}	2.6×10^{-2}/1.3×10^{-5}	2.6×10^{-2}/1.3×10^{-5}	2.6×10^{-2}/1.3×10^{-5}	2.6×10^{-2}/1.3×10^{-5}	2.6×10^{-2}/1.3×10^{-5}	2.6×10^{-2}/1.3×10^{-5}
Nonradiological impacts							
Vehicle emissions (LCFs)	3.1×10^{-2}	3.9×10^{-2}	3.9×10^{-2}	3.9×10^{-2}	3.9×10^{-2}	3.9×10^{-2}	3.9×10^{-2}
Fatalities	0.04	0.08	0.08	0.08	0.08	0.08	0.08

a. Under the mostly rail scenario, rail shipments would arrive in Nevada at one of six existing rail nodes. Impacts would vary according to the node. From that node, DOE would use one of the rail or heavy-haul implementing alternatives to complete the transportation to Yucca Mountain (see Section J.1.2).

b. For heavy-haul truck transportation, the Caliente junction is the location of the proposed Caliente intermodal transfer station for heavy-haul trucks near the town of Caliente in eastern Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on one of the Caliente, Caliente/Chalk Mountain, or Caliente/Las Vegas routes. For branch rail line transportation, railcars would transfer via the Caliente Option to the Caliente Corridor at the Caliente junction.

c. For heavy-haul truck transportation, the Dry Lake junction is near the location of the proposed Apex/Dry Lake intermodal transfer station for heavy-haul trucks in southeast Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on the Apex/Dry Lake route.

Table J-81. Estimated transportation impacts for the States of Indiana, Michigan, and Ohio (page 2 of 2).

d. For heavy-haul truck transportation, the Jean junction is near the location of the proposed Sloan/Jean intermodal transfer station for heavy-haul trucks in southern Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on the Sloan/Jean route. For branch rail line transportation, railcars would transfer from the mainline railroad via the Wilson Pass or Stateline Pass Option of the Jean Corridor, near the Jean junction.

e. For branch rail line transportation, railcars would transfer from the mainline railroad at the Beowawe junction in north-central Nevada to the Carlin Corridor.

f. For branch rail line transportation, railcars would transfer from the mainline railroad at the Eccles junction east of Caliente, Nevada, via the Eccles Option or nearby via the Crestline Option of the Caliente or Caliente-Chalk Mountain Corridor. Impacts in states outside Nevada would be the same for the Eccles and Crestline Options of the Caliente and Caliente-Chalk Mountain Corridors.

g. For branch rail line transportation, railcars would transfer from the mainline railroad at the Apex junction in southeast Nevada, possibly via the Valley Connection, to the Valley Modified Corridor.

h. LCF = latent cancer fatality.

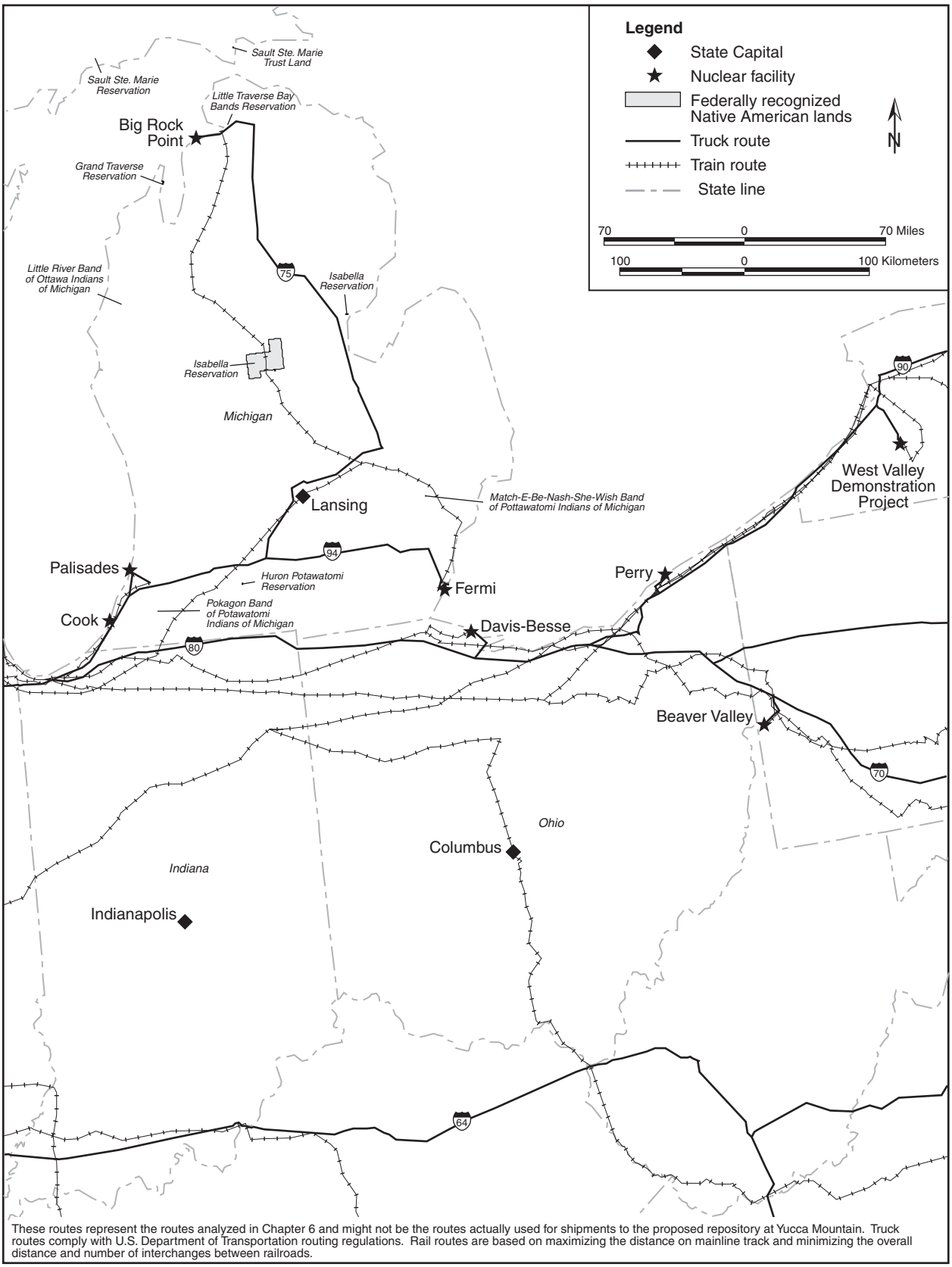


Figure J-41. Highway and rail routes used to analyze transportation impacts - Indiana, Michigan, and Ohio.